Before the
**FEDERAL COMMUNICATIONS COMMISSION**
Washington, D.C. 20554

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| In the Matter of | ) | |
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| Amendment of Part 101 of the | ) | WT Docket No. 07-51 |
| Commission's Rules to Modify | ) | RM-11043 |
| Antenna Requirements for the | ) | |
| 10.7-11.7 GHz Band | ) | |

**COMMENTS OF INTELSAT, LTD.**

Intelsat, Ltd. ("Intelsat") hereby comments on the Notice of Proposed Rulemaking ("NPRM") in the above-captioned proceeding.[1] In the NPRM, the Commission seeks comment on a proposal for changes to Part 101 of its rules that effectively would reduce the minimum antenna size for Fixed Service ("FS") stations in the 10.7-11.7 GHz band (the "11 GHz band") from 1.22 meters to 0.61 meters.

For reasons that are discussed below, the proposal raises significant issues concerning interference to fixed satellite service ("FSS") earth stations operating in the 11 GHz band. The burden should be on the proponents of the FS rule changes to demonstrate that harmful interference can be avoided. As a possible solution to the interference issue, the Commission should consider segmenting the 11 GHz band in the manner suggested in these comments. Band segmentation also will improve spectrum efficiency and provide additional flexibility for FS and FSS users.

[1] Notice of Proposed Rulemaking, FCC 07-38 (March 27, 2007).

Intelsat is the leading FSS provider worldwide and the leading provider of these services to each of the media, network services and telecom and government customer sectors, enabling people and businesses everywhere constant access to information and entertainment. As the licensee of 11 GHz band FSS earth stations and the operator of satellites that transmit on 11 GHz band frequencies, Intelsat has a significant interest in the resolution of the issues implicated by the NPRM.

## I. INTRODUCTION

The 10.7-11.7 GHz band is shared between the Fixed Service and the Fixed Satellite Service, both of which have primary allocations in the band. The Commission has rules in place that have the effect of limiting the deployment of FS and FSS stations in the 10.7-11.7 GHz band. In the case of FSS stations, those rules take the form of a footnote, NG 104, to the Commission's Table of Allocations. This footnote limits use of the band for FSS purposes to "international systems."[2] The Commission has made clear that the focus of this rule is on restricting deployment, stating that its purpose is "to limit the number of FSS earth stations with which the terrestrial fixed service would be required to coordinate."[3]

The Commission on occasion has waived the "international-only" requirement of NG 104. It has done so, however, only in circumstances that also limited deployment of FSS stations in the band. For example, it has granted waivers involving a small number

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[2] *See* 47 C.F.R. § 2.106, Footnote NG 104 ("The use of the bands 10.7–11.7 GHz (space-to-Earth) and 12.75–13.25 GHz (Earth-to-space) by the fixed-satellite service in the geostationary-satellite orbit shall be limited to international systems, *i.e.,* other than domestic systems.")

[3] *See, e.g., GE American Communications, Inc.,* 15 FCC Rcd 3385 at ¶ 10 (Sat. & Radiocomm. Div. 1999) (footnote omitted).

of gateway FSS earth stations or earth stations used for telemetry, tracking, and command.[4] It also has granted waivers conditioned on FSS earth stations accepting harmful interference from present or future FS stations, thereby as a practical matter limiting the uses to which the FSS stations could be put and the places they could be located.[5]

The FS rules also have the effect of limiting station deployment. The technical standards specified in Part 101 prevent the installation of 11 GHz band FS antennas smaller than 1.22 meters. By limiting the deployment of FS stations and FSS stations in the 10.7-11.7 GHz band, the current rules prevent either service from proliferating.

## II. THE PROPOSED RULE CHANGE IMPLICATES SIGNIFICANT INTERFERENCE ISSUES.

The Satellite Industry Association ("SIA"), of which Intelsat and other FSS operators are members, opposed Fibertower's Petition based on multiple interference concerns.[6] According to Fibertower, smaller antennas can be deployed in many more locations than larger antennas because the smaller antennas weigh less and cost less.[7] As a result, sanctioning smaller antennas could greatly increase the number of antennas operating in the vicinity of 11 GHz band earth stations. The

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[4] *See, e.g.,* Order and Authorization, *Mobile Satellite Ventures Subsidiary LLC,* DA 05-50 (Jan. 10, 2005) at ¶ 28.
[5] *See* Order and Authorization, *Echostar KuX Corporation,* DA 04-3162 (Sept. 30, 2004) at ¶¶ 9-13; Order and Authorization, *Echostar Satellite LLC,* DA 04-3163 (Sept. 30, 2004) at ¶¶ 9-13; Order and Authorization, *Echostar KuX Corporation,* DA 04-3164 (Sept. 30, 2004) at ¶¶ 9-13.
[6] Opposition of the Satellite Industry Association, RM-11043 (Aug. 23, 2004) at 7-8.
[7] Fibertower Petition for Rulemaking ("Petition") at 2.

transmissions from multiple 11 GHz FS antennas in the aggregate may interfere with 11 GHz earth station operations, even if each FS antenna standing alone would not create a problem. As stated in SIA's Opposition, FiberTower did not take the problem of aggregate interference to earth station operations into account in its rulemaking Petition.

In addition, SIA showed in its Opposition that pointing error is a more substantial problem when smaller antennas are used. Smaller antennas are more difficult to point accurately both because the equipment itself is smaller and because of the characteristics of their antenna patterns. As Fibertower has recognized, a smaller antenna has a "less tightly focused beam, compared to a large antenna."[8] It is therefore harder to determine where the antenna's signal peak is, which is necessary to verify whether the antenna is pointed accurately. A mispointed small FS antenna could result in an earth station experiencing higher levels of interference than was predicted at the coordination stage.

Although the Commission adopted the NPRM, it did not draw any conclusions, tentative or otherwise, concerning these interference issues. Rather, the Commission asked parties to comment as to "whether the use of 0.61 meter antennas by FS licensees in the 11 GHz band will adversely affect other users in the band by increasing the risk of aggregate interference," and in particular as to "the risk that aggregate interference

[8] Petition at 2.

poses to earth stations."[9] The Commission also sought comment as to whether "the use of smaller antennas in the 11 GHz band significantly increases the risk of interference to other users in the band due to accuracy errors in pointing."[10]

In the face of this evidence that the use of 0.61 meter antennas by 11 GHz band FS licensees could harm existing FSS operations, it is incumbent on Fibertower, as the proponent of a rule change, to demonstrate that its proposal will not adversely affect the public interest by causing harmful interference to existing, licensed services. To date, Fibertower has not satisfied this requirement. Although Fibertower made conclusory statements in response the interference concerns raised by SIA,[11] it never provided hard engineering analysis. Unless Fibertower or another FS proponent provides a substantive technical showing that demonstrates conclusively in this proceeding that the aggregate interference issues and pointing error issues have been resolved, then unless the 11 GHz band is segmented in the manner discussed below, the proposal for smaller FS antennas in the 11 GHz band should not be adopted.

## III. THE COMMISSION SHOULD CONSIDER SEGMENTING THE 11 GHz BAND.

Section 101.115(b) of the Commission's rules,[12] which establishes the technical rules that effectively limit 11 GHz FS antennas to a maximum size of 1.22 meters, is designed to "maximize the use of microwave spectrum … while avoiding interference between operators." The ostensible basis for revisiting this rule is that it was "based on

[9] NPRM, ¶ 23.
[10] NPRM, ¶ 25.
[11] *See* NPRM, ¶ 22.
[12] 47 C.F.R. § 101.115(b).

the technical sophistication of the communications equipment and needs of the various users of the band at the time," and that since then there has been a "technological evolution of communications equipment."[13]

The evolution in FS communications equipment, however, is not the only change that has transpired since the Commission put its 11 GHz band plan in place. Of equal or greater significance are the changes that have occurred on the satellite side. When the Commission adopted NG104, which limits the proliferation of FSS earth stations in the 11 GHz band, that band was lightly used for FSS purposes and capacity remained on conventional Ku-band frequencies. Since that time, demand for conventional Ku-band capacity has expanded and the supply of unused capacity has dwindled,[14] putting increased pressure on the 11 GHz band for FSS expansion capacity. Some FSS services have migrated to the 11 GHz band, but the utility of the band is severely constrained by the "international-only" restrictions of NG104 and the imposition of non-interference conditions on domestic FSS services that have been permitted in the band on a waiver basis.

Segmenting the 11 GHz band between FS uses and FSS uses may make it possible to resolve the FS/FSS interference issue, address all of the changed circumstances, terrestrial-related and satellite-related, that have occurred, and enhance spectrum efficiency. The 11 GHz band consists of a large amount of spectrum: 1,000

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[13] NPRM, ¶ 3.

[14] Among other things, FSS Ku-band frequencies are used to provide local-into-local direct-to-home services and HDTV services.

MHz. If 500 MHz were allocated for FSS purposes, a full 500 MHz would remain for FS purposes. With this segmentation in place, each service could use its 500 MHz more efficiently and without posing a risk of interference to the other service. FS stations would not have to take FSS stations into account for coordination purposes; FSS stations could be used to provide both domestic and international services in the 11 GHz band, including for ubiquitous services that are not feasible in a band that must be coordinated with terrestrial users.

To maximize the benefits of band segmentation, Intelsat proposes that, subject to an exception for gateway earth stations that is explained below, the "unplanned" portion of the 11 GHz band, at 10.95-11.2 GHz and 11.45-11.7 GHz, be dedicated to FSS uses and the "planned," Appendix 30B portion of the 11 GHz band at 10.7-10.95 GHz and 11.2-11.45 GHz be dedicated to FS uses. Intelsat further proposes that, to avoid displacement, the limited number of FSS gateway earth stations, present and future, that serve as feeder links for mobile satellite service systems continue to operate in the Appendix 30B planned portion of the band. The FS stations in the planned portion of the band then could be coordinated, as they already are today, with these gateway earth stations.

## CONCLUSION

SIA has presented evidence that the use of 0.61 meter antennas by 11 GHz band FS licensees could harm existing FSS operations. Faced with this evidence, the Commission should not adopt the proposal for 0.61 meter antennas in the 11 GHz band unless Fibertower satisfies its burden of showing that harmful interference can be avoided or the band is segmented. In addition to resolving the interference issue, segmenting the band would address changed circumstances affecting FS and FSS stations and would maximize spectrum efficiency.

Respectfully submitted,

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